Jacques Huyghe

List of Publications by Year
in descending order

112 papers	3,661 citations	126708 33 h-index	143772 57 g-index
114 all docs	114 docs citations	114 times ranked	2440 citing authors

#	Article	IF	Citations
1	Quadriphasic mechanics of swelling incompressible porous media. International Journal of Engineering Science, 1997, 35, 793-802.	2.7	296
2	Dependence of local left ventricular wall mechanics on myocardial fiber orientation: A model study. Journal of Biomechanics, 1992, 25, 1129-1140.	0.9	207
3	Estimation of the poroelastic parameters of cortical bone. Journal of Biomechanics, 2002, 35, 829-835.	0.9	188
4	Depth-dependent Compressive Equilibrium Properties of Articular Cartilage Explained by its Composition. Biomechanics and Modeling in Mechanobiology, 2007, 6, 43-53.	1.4	145
5	A Comparison Between Mechano-Electrochemical and Biphasic Swelling Theories for Soft Hydrated Tissues. Journal of Biomechanical Engineering, 2005, 127, 158-165.	0.6	116
6	A validation of the quadriphasic mixture theory for intervertebral disc tissue. International Journal of Engineering Science, 1997, 35, 1419-1429.	2.7	109
7	Long-range repulsion of colloids driven by ion exchange and diffusiophoresis. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 6554-6559.	3.3	107
8	Influence of endocardial-epicardial crossover of muscle fibers on left ventricular wall mechanics. Journal of Biomechanics, 1994, 27, 941-951.	0.9	103
9	A Case for Strain-Induced Fluid Flow as a Regulator of BMU-Coupling and Osteonal Alignment. Journal of Bone and Mineral Research, 2002, 17, 2021-2029.	3.1	101
10	A composition-based cartilage model for the assessment of compositional changes during cartilage damage and adaptation. Osteoarthritis and Cartilage, 2006, 14, 554-560.	0.6	95
11	Remodelling of continuously distributed collagen fibres in soft connective tissues. Journal of Biomechanics, 2003, 36, 1151-1158.	0.9	90
12	Computational Analyses of Mechanically Induced Collagen Fiber Remodeling in the Aortic Heart Valve. Journal of Biomechanical Engineering, 2003, 125, 549-557.	0.6	89
13	The constitutive behaviour of passive heart muscle tissue: A quasi-linear viscoelastic formulation. Journal of Biomechanics, 1991, 24, 841-849.	0.9	79
14	Osmoviscoelastic finite element model of the intervertebral disc. European Spine Journal, 2006, 15, 361-371.	1.0	76
15	Thermo-Chemo-Electro-Mechanical Formulation of Saturated Charged Porous Solids. Transport in Porous Media, 1999, 34, 129-141.	1.2	74
16	Ageing and degenerative changes of the intervertebral disc and their impact on spinal flexibility. European Spine Journal, 2014, 23 Suppl 3, S324-32.	1.0	73
17	A two-phase finite element model of the diastolic left ventricle. Journal of Biomechanics, 1991, 24, 527-538.	0.9	70
18	Porous medium finite element model of the beating left ventricle. American Journal of Physiology - Heart and Circulatory Physiology, 1992, 262, H1256-H1267.	1.5	69

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19	An ionised/non-ionised dual porosity model of intervertebral disc tissue. Biomechanics and Modeling in Mechanobiology, 2003, 2, 3-19.	1.4	65
20	3D FE implementation of an incompressible quadriphasic mixture model. International Journal for Numerical Methods in Engineering, 2003, 57, 1243-1258.	1.5	63
21	The enhanced local pressure model for the accurate analysis of fluid pressure driven fracture in porous materials. Computer Methods in Applied Mechanics and Engineering, 2015, 286, 293-312.	3.4	63
22	Confined Compression of Canine Annulus Fibrosus Under Chemical and Mechanical Loading. Journal of Biomechanical Engineering, 1995, 117, 390-396.	0.6	52
23	A biochemical/biophysical 3D FE intervertebral disc model. Biomechanics and Modeling in Mechanobiology, 2010, 9, 641-650.	1.4	42
24	Finite Element Model of Mechanically Induced Collagen Fiber Synthesis and Degradation in the Aortic Valve. Annals of Biomedical Engineering, 2003, 31, 1040-1053.	1.3	40
25	Finite element analysis of blood flow through biological tissue. International Journal of Engineering Science, 1997, 35, 375-385.	2.7	39
26	Influence of Osmotic Pressure Changes on the Opening of Existing Cracks in 2 Intervertebral Disc Models. Spine, 2006, 31, 1783-1788.	1.0	39
27	A large deformation formulation for fluid flow in a progressively fracturing porous material. Computer Methods in Applied Mechanics and Engineering, 2013, 256, 29-37.	3.4	39
28	Mode I crack propagation in hydrogels is step wise. Engineering Fracture Mechanics, 2013, 97, 72-79.	2.0	37
29	Nonhomogeneous Permeability of Canine Anulus Fibrosus. Spine, 1997, 22, 7-16.	1.0	36
30	A FINITE ELEMENT MIXTURE MODEL FOR HIERARCHICAL POROUS MEDIA. International Journal for Numerical Methods in Engineering, 1997, 40, 193-210.	1.5	36
31	Are disc pressure, stress, and osmolarity affected by intra- and extrafibrillar fluid exchange?. Journal of Orthopaedic Research, 2007, 25, 1317-1324.	1.2	36
32	Experimental and model determination of human intervertebral disc osmoviscoelasticity. Journal of Orthopaedic Research, 2008, 26, 1141-1146.	1.2	35
33	Regional wall mechanics in the ischemic left ventricle: numerical modeling and dog experiments. American Journal of Physiology - Heart and Circulatory Physiology, 1996, 270, H398-H410.	1.5	34
34	Triphasic finite element model for swelling porous media. International Journal for Numerical Methods in Fluids, 1995, 20, 1039-1046.	0.9	31
35	Poroelasticity of saturated solids with an application to blood perfusion. International Journal of Engineering Science, 1996, 34, 1019-1031.	2.7	31
36	Strain distribution on rat medial gastrocnemius (MG) during passive stretch. Journal of Biomechanics, 1996, 29, 1069-1074.	0.9	30

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37	Design of next generation total disk replacements. Journal of Biomechanics, 2012, 45, 134-140.	0.9	30
38	A computational spinal motion segment model incorporating a matrix composition-based model of the intervertebral disc. Journal of the Mechanical Behavior of Biomedical Materials, 2016, 54, 194-204.	1.5	30
39	Interaction between crack tip advancement and fluid flow in fracturing saturated porous media. Mechanics Research Communications, 2017, 80, 24-37.	1.0	30
40	Low Reynolds number steady state flow through a branching network of rigid vessels: I. A mixture theory. Biorheology, 1989, 26, 55-71.	1.2	29
41	Title is missing!. Transport in Porous Media, 2003, 50, 111-126.	1.2	28
42	Finite deformation theory of hierarchically arranged porous solidsâ€"I. Balance of mass and momentum. International Journal of Engineering Science, 1995, 33, 1861-1871.	2.7	26
43	Chemically Responsive Hydrogel Deformation Mechanics: A Review. Molecules, 2019, 24, 3521.	1.7	26
44	Finite deformation theory of hierarchically arranged porous solidsâ€"II. Constitutive behaviour. International Journal of Engineering Science, 1995, 33, 1873-1886.	2.7	25
45	Mechanical blood-tissue interaction in contracting muscles. Journal of Biomechanics, 1998, 31, 401-409.	0.9	25
46	Mixed finite element modelling of cartilaginous tissues. Mathematics and Computers in Simulation, 2003, 61, 549-560.	2.4	25
47	On the Thermodynamical Admissibility of the Triphasic Theory of Charged Hydrated Tissues. Journal of Biomechanical Engineering, 2009, 131, 044504.	0.6	24
48	Convection associated with exclusion zone formation in colloidal suspensions. Soft Matter, 2016, 12, 1127-1132.	1.2	23
49	A three-dimensional transient mixed hybrid finite element model for superabsorbent polymers with strain-dependent permeability. Soft Matter, 2018, 14, 3834-3848.	1.2	22
50	Poromechanics of Compressible Charged Porous Media Using the Theory of Mixtures. Journal of Biomechanical Engineering, 2007, 129, 776.	0.6	21
51	3D non-affine finite strains measured in isolated bovine annulus fibrosus tissue samples. Biomechanics and Modeling in Mechanobiology, 2012, 11, 161-170.	1.4	21
52	Intervertebral disc creep behavior assessment through an open source finite element solver. Journal of Biomechanics, 2014, 47, 297-301.	0.9	21
53	Low Reynolds number steady state flow through a branching network of rigid vessels: II. A finite element mixture model. Biorheology, 1989, 26, 73-84.	1.2	19
54	Poroelastic modeling of the intervertebral disc: A path toward integrated studies of tissue biophysics and organ degeneration. MRS Bulletin, 2015, 40, 324-332.	1.7	19

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55	Biomechanical Behavior of a Biomimetic Artificial Intervertebral Disc. Spine, 2012, 37, E367-E373.	1.0	18
56	Two-Dimensional Mode I Crack Propagation in Saturated Ionized Porous Media Using Partition of Unity Finite Elements. Journal of Applied Mechanics, Transactions ASME, 2013, 80, .	1.1	18
57	Partition and Diffusion of Sodium and Chloride Ions in Soft Charged Foam: The Effect of External Salt Concentration and Mechanical Deformation. Tissue Engineering, 1998, 4, 365-378.	4.9	17
58	Spatial interaction between tissue pressure and skeletal muscle perfusion during contraction. Journal of Biomechanics, 2001, 34, 631-637.	0.9	16
59	Mechanisms that play a role in the maintenance of the calcium gradient in the epidermis. Skin Research and Technology, 2007, 13, 369-376.	0.8	16
60	Triphasic FE Modeling of the Skin Water Barrier. Transport in Porous Media, 2003, 50, 93-109.	1.2	15
61	Numerical simulation of deformations and electrical potentials in a cartilage substitute. Biorheology, 2003, 40, 123-31.	1.2	15
62	Confined compression and torsion experiments on a pHEMA gel in various bath concentrations. Biomechanics and Modeling in Mechanobiology, 2013, 12, 617-626.	1.4	14
63	Bridging Effective Stress and Soil Water Retention Equations in Deforming Unsaturated Porous Media: A Thermodynamic Approach. Transport in Porous Media, 2017, 117, 349-365.	1.2	14
64	Coupled Processes in Charged Porous Media: From Theory to Applications. Transport in Porous Media, 2019, 130, 183-214.	1.2	14
65	Mathematical modelling and numerical solution of swelling of cartilaginous tissues. Part II: Mixed-hybrid finite element solution. ESAIM: Mathematical Modelling and Numerical Analysis, 2007, 41, 679-712.	0.8	13
66	A mixed hybrid finite element framework for the simulation of swelling ionized hydrogels. Computational Mechanics, 2019, 63, 835-852.	2.2	13
67	The strain-generated electrical potential in cartilaginous tissues: a role for piezoelectricity. Biophysical Reviews, 2021, 13, 91-100.	1.5	13
68	A Partition of Unity-Based Model for Crack Nucleation and Propagation in Porous Media, Including Orthotropic Materials. Transport in Porous Media, 2015, 106, 505-522.	1.2	12
69	An investigation of the step-wise propagation of a mode-II fracture in a poroelastic medium. Mechanics Research Communications, 2017, 80, 10-15.	1.0	12
70	Mathematical modelling and numerical solution of swelling of cartilaginous tissues. Part I: Modelling of incompressible charged porous media. ESAIM: Mathematical Modelling and Numerical Analysis, 2007, 41, 661-678.	0.8	11
71	Piezoelectricity in the Intervertebral disc. Journal of Biomechanics, 2020, 102, 109622.	0.9	11
72	The Importance of the Mixing Energy in Ionized Superabsorbent Polymer Swelling Models. Polymers, 2020, 12, 609.	2.0	10

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73	Finite-element simulation of blood perfusion in muscle tissue during compression and sustained contraction. American Journal of Physiology - Heart and Circulatory Physiology, 1997, 273, H1587-H1594.	1.5	9
74	A 3-D Finite Element Model of Blood Perfused Rat Gastrocnemius Medialis Muscle. European Journal of Morphology, 1996, 34, 19-24.	1.4	9
75	Requirements for an artificial intervertebral disc. International Journal of Artificial Organs, 2001, 24, 311-21.	0.7	9
76	On the numerical simulation of crack interaction in hydraulic fracturing. Computational Geosciences, 2018, 22, 423-437.	1.2	8
77	Swelling Driven Crack Propagation in Large Deformation in Ionized Hydrogel. Journal of Applied Mechanics, Transactions ASME, 2018, 85, .	1.1	8
78	Do osmotic forces play a role in the uptake of water by human skin?. Skin Research and Technology, 2004, 10, 109-112.	0.8	7
79	Isogeometric Analysis of a Multiphase Porous Media Model for Concrete. Journal of Engineering Mechanics - ASCE, 2018, 144, .	1.6	6
80	A three-dimensional mechano-electrochemical material model of mechanosensing hydrogels. Materials and Design, 2021, 198, 109340.	3.3	6
81	Propagating Cracks in Saturated Ionized Porous Media. Lecture Notes in Applied and Computational Mechanics, 2011, , 425-442.	2.0	6
82	Thermo-Chemo-Electro-Mechanical Formulation of Saturated Charged Porous Solids. , 1999, , 129-141.		6
83	Uniaxial tensile testing of canine annulus fibrosus tissue under changing salt concentrations. Biorheology, 2004, 41, 255-61.	1.2	6
84	Analytical Solution of a Pressure Transmission Experiment on Shale Using Electrochemomechanical Theory. Journal of Engineering Mechanics - ASCE, 2007, 133, 994-1002.	1.6	5
85	Measuring principles of frictional coefficients in cartilaginous tissues and its substitutes. Biorheology, 2002, 39, 47-53.	1.2	5
86	Comparing mixed hybrid finite element method with standard FEM in swelling simulations involving extremely large deformations. Computational Mechanics, 2020, 66, 287-309.	2.2	4
87	A two-scale approach for propagating cracks in a fluid-saturated porous material. IOP Conference Series: Materials Science and Engineering, 2010, 10, 012044.	0.3	3
88	Reply to Discussion: â€œOn the Thermodynamical Admissibility of the Triphasic Theory of Charged Hydrated Tissuesâ€•(Mow, V. C., Lai, W. M., Setton, L. A., Gu, W., Yao, H., and Lu, X. L., 2009, ASME J.) Tj ETQq0 0 0 rgBT /Overlock 10 Tf	0.6	3
89	Validation of an Open Source Finite Element Biphasic Poroelastic Model. Application to the Intervertebral Disc Biomechanics. , 2013, , .		3
90	Effects of Intrinsic Properties on Fracture Nucleation and Propagation in Swelling Hydrogels. Polymers, 2019, 11, 926.	2.0	3

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91	A strain induced softening and hardening constitutive model for superabsorbent polymers undergoing finite deformation. International Journal of Engineering Science, 2020, 154, 103346.	2.7	3
92	Experimental measurement of electrical conductivity and electro-osmotic permeability of ionised porous media. , 2002, , 295-313.		3
93	Swelling media: concepts and applications. , 2004, , 57-124.		3
94	Biaxial testing of canine annulus fibrosus tissue under changing salt concentrations. Anais Da Academia Brasileira De Ciencias, 2010, 82, 145-151.	0.3	2
95	Swelling-Driven Crack Propagation in Large Deformation in Ionized Hydrogel. Journal of Applied Mechanics, Transactions ASME, 2018, 85, .	1.1	2
96	Preface on Physicochemical and Electromechanical Interactions in Porous Media. Transport in Porous Media, 2003, 50, 1-3.	1.2	1
97	Point of View: Response. Spine, 2006, 31, E527.	1.0	1
98	2D Mixed Hybrid FEM of Lanir Model. Procedia IUTAM, 2015, 12, 93-104.	1.2	1
99	1D Measurement of Sodium Ion Flow in Hydrogel After a Bath Concentration Jump. Annals of Biomedical Engineering, 2015, 43, 1706-1711.	1.3	1
100	Swelling Driven Cracking in Large Deformation in Porous Media. , 2017, , .		1
101	Reply to the Comments on â€œBridging Effective Stress and Soil Water Retention Equations in Deforming Unsaturated Porous Media: A Thermodynamic Approachâ€â€"by Nasser Khalili and Arman Khoshghalb. Transport in Porous Media, 2018, 122, 521-526.	1.2	1
102	Fluid-solid mixtures and electrochemomechanics: the simplicity of Lagrangian mixture theory. Computational and Applied Mathematics, 2004, 23, .	1.0	1
103	Measurements of Deformations and Electrical Potentials in a Charged Porous Medium. , 2005, , 133-139.		1
104	Lâ€type <scp>Voltageâ€Gated</scp> calcium channels partly mediate Mechanotransduction in the intervertebral disc. JOR Spine, 0, , .	1.5	1
105	Singularity solution of Lanirâ€™s osmoelasticity: verification of discontinuity simulations in soft tissues. Biomechanics and Modeling in Mechanobiology, 2011, 10, 845-865.	1.4	0
106	Nucleation and Mixed Mode Crack Propagation in a Porous Material. , 2013, , .		0
107	A Full 3D Mixed Hybrid Finite Element Model of Superabsorbent Polymers. , 2017, , .		0
108	On the Physics Underlying Longitudinal Capillary Recruitment. Advances in Experimental Medicine and Biology, 2018, 1097, 191-200.	0.8	0

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109	Porous Medium Mechanics and the Skin Barrier. Solid Mechanics and Its Applications, 2001, , 287-292.	0.1	0
110	3D Finite Strains in Bovine Annulus Fibrosus Tissue. , 2007, , .		0
111	Osmotic Prestressing of a Spinal Motion Segment. , 1993, , 321-330.		0
112	Fluid Flow in the Self-Optimised Structure of Compact Bone. , 2005, , 299-305.		0